



National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200625-0

NVLAP Code: 20/A01

ANSI/NCSL Z540-1-1994; Part 1

Compliant

MECHANICAL

NVLAP Code: 20/M01

Acoustic

Measurement Microphones

Open Circuit Pressure Sensitivity: Comparison

<i>Range</i>	<i>Frequency Domain</i>	<i>Best Uncertainty (\pm) in dB^{notes 1, 4}</i>
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	250 Hz	0.09
-50 dB to -20 dB μ 1 V/Pa (3 mV/Pa to 100 mV/Pa)	1 kHz	0.11

Frequency Response: Electrostatic Excitation

<i>Range</i>	<i>Frequency Domain in Hz</i>	<i>Best Uncertainty (\pm) in dB^{notes 1, 4}</i>	<i>Actuator Response</i>	<i>Free Field Response</i>
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	200 to 1.25 k	0.14		0.18
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	1.25 k to 4 k	0.14		0.23

2006-04-01 through 2007-03-31

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-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	4 k to 8 k	0.17	0.45
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	8 k to 10 k	0.38	0.57
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	10 k to 16 k	0.38	0.77
-50 dB to -20 dB re 1 V/Pa (3 mV/Pa to 100 mV/Pa)	16 k to 20 k	0.59	0.89

Acoustical Calibrators and Pistonphones
Sound Pressure Level

Range	Frequency Domain	Best Uncertainty (\pm)^{notes 1, 4}
93 dB to 150 dB re 20 μ Pa	250 Hz (\pm 20 Hz)	0.095 dB ^{note 2} 0.092 dB ^{note 3}
93 dB to 150 dB re 20 μ Pa	1 kHz (\pm 20 Hz)	0.11 dB ^{note 2} 0.10 dB ^{note 3}
Range	Frequency Domain	Best Uncertainty (\pm)^{note 1}
93 dB to 150 dB re 20 μ Pa	63 Hz to 200 Hz	0.1 dB
93 dB to 150 dB re 20 μ Pa	315 Hz to 800 Hz	0.12 dB
93 dB to 150 dB re 20 μ Pa	1250 Hz to 5 kHz	0.15 dB
93 dB to 150 dB re 20 μ Pa	6.3 kHz to 8 kHz	0.18 dB
93 dB to 150 dB re 20 μ Pa	10 kHz to 12.5 kHz	0.2 dB

Sound Frequency

Range	Frequency Domain	Best Uncertainty (\pm)^{notes 1, 4}
10 Hz to 20 kHz	10 Hz to 20 kHz	0.02 %

Frequency Stability

Range	Frequency Domain	Best Uncertainty (\pm)^{notes 1, 4}
>0.01 %	10 Hz to 20 kHz	< 5.1 % of the measured value

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Distortion

Range	Frequency Domain	Best Uncertainty (\pm)^{notes 1, 4}
>0.01 %	10 Hz to 20 kHz	0.07 % distortion (analyzer method)

Sound Level Meters, Dosimeters, Analyzers, Filters

Acoustical Test

Accuracy: Sound Pressure Level

Range in dB	Frequency Domain	Best Uncertainty (\pm) in dB^{notes 1, 4}
94, 104, 114	31.5 Hz	0.16
94, 104, 114	63 Hz	0.15
94, 104, 114	125 Hz	0.15
124	250 Hz	0.1
94, 104, 114	250 Hz	0.15
94, 104, 114	500 Hz	0.15
124	1 kHz	0.12
94, 104, 114	2 kHz	0.15
94, 104, 114	4 kHz	0.15
94, 104, 114	6.3 kHz	0.16
94, 104, 114	8 kHz	0.9
94, 104, 114	12.5 kHz	2.4
94, 104, 114	16 kHz	1.2

Electrical Tests

Range	Domain	Best Uncertainty (\pm)^{notes 1, 4}		Remarks
		%	dB	
0.1 mV to 40 V	10 Hz to 20 kHz	1.64	0.14	Sine signal
0.1 mV to 40 V	1 kHz to 8 kHz	1.64	0.14	Burst signal
0.1 mV to 40 V	200 μ s to 10 ms	1.64	0.14	Rectangular impulse
0.1 mV to 40 V	10 Hz to 20 kHz	1.68	0.15	Averaging

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SignalConditioners

Range	Frequency Domain	Best Uncertainty (\pm) ^{notes 1, 4}	Remarks
-40 dB to -20 dB	3 Hz to 250 kHz	0.35	Gain test
3 Hz to 20 kHz	3 Hz to 250 kHz	0.35	Frequency response
0.6 Hz to 20 kHz	0.1 Hz to 20 kHz	10.2	Noise measurement

NVLAP Code: 20/M11

Vibration^{note 5}

Range	Frequency Domain in Hz	Best Uncertainty (\pm) in % ^{notes 1, 4}
Acceleration		

9.0 m/s ² to 200 m/s ²	63 to 400	1.2
0.9 m/s ² to 200 m/s ²	50 to 5 k	2.0

Accelerometer Sensitivity Charge

0.1 pC/ms ⁻² to 500 pC/ms ⁻²	20 to 50	2.5
0.1 pC/ms ⁻² to 500 pC/ms ⁻²	50 to 400	1.9
0.1 pC/ms ⁻² to 500 pC/ms ⁻²	400 to 5 k	1.7
0.1 pC/ms ⁻² to 500 pC/ms ⁻²	5 k to 8 k	3.6

Voltage

0.1 mV/ms ⁻² to 500 mV/ms ⁻²	20 to 50	2.6
0.1 mV/ms ⁻² to 500 mV/ms ⁻²	63 to 200	1.1
0.1 mV/ms ⁻² to 500 mV/ms ⁻²	400 to 5 k	1.9
0.1 mV/ms ⁻² to 500 mV/ms ⁻²	5 k to 8 k	3.6

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Vibration Meters
Electrical Sine Signal Tests

Range	Frequency Domain in Hz	Best Uncertainty (\pm) ^{notes 1, 4}	
		%	dB
0.01 mV to 20 V	3 to 5	1.6	0.14
0.01 mV to 20 V	5 to 10	0.96	0.08
0.01 mV to 20 V	10 to 20 k	0.80	0.06

Overall Accuracy Acceleration

Range	Frequency Domain in Hz	Best Uncertainty (\pm) ^{notes 1, 4}	
		%	dB
0.9 m/s ² to 100 m/s ²	20 to 40	1.5	0.14
0.9 m/s ² to 100 m/s ²	40 to 630	1.6	0.14
0.9 m/s ² to 100 m/s ²	630 to 4 k	1.8	0.14
0.9 m/s ² to 100 m/s ²	4 k to 5 k	1.8	0.16

1. Represents an expanded uncertainty using a coverage factor, $k = 2$, at an approximate level of confidence of 95 %.
2. At reference conditions.
3. At actual conditions.
4. Does not include a component of uncertainty attributed to the device under test. This will be included and reported on all calibration certificates.
5. Traceability for acceleration measurements has been established to the International System of Units (SI) through standards maintained by the National Research Council of Canada. This will be noted on all reports/certificates of calibration.

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